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WM_W800_Getting Started Manual

V1.3

WinnerMicro

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1 **Overview**

Instruct users how to build a software environment for w800 hardware development, and show how to compile and download firmware to w800 development board and other operation steps.

This manual is based on the W800 ARDUINO development board to introduce and upgrade and run the examples.

w800 is a SoC based on XT804 core, supporting functions:

ÿ 2.4G Wi-Fi

ÿ Bluetooth

ÿ Built-in multiple digital interfaces (QFlash, external PSRAM, UART, GPIO, I²C, PWM, I²S, 7816, SDIO, HSPIÿTouchSensorÿ

ÿ Support multiple hardware encryption and decryption algorithms (RC4, DES, 3DES, AES, RSA, MD5, SHA1)

ÿ Built-in security features

2 **Preparations**

hardware:

ÿ w800 development board

ÿ USB data cable (Micro USB)

ÿ PC (Windows, Linux or Mac OS)

software:

ÿ Toolchain for compiling w800 code

ÿ Compilation tools

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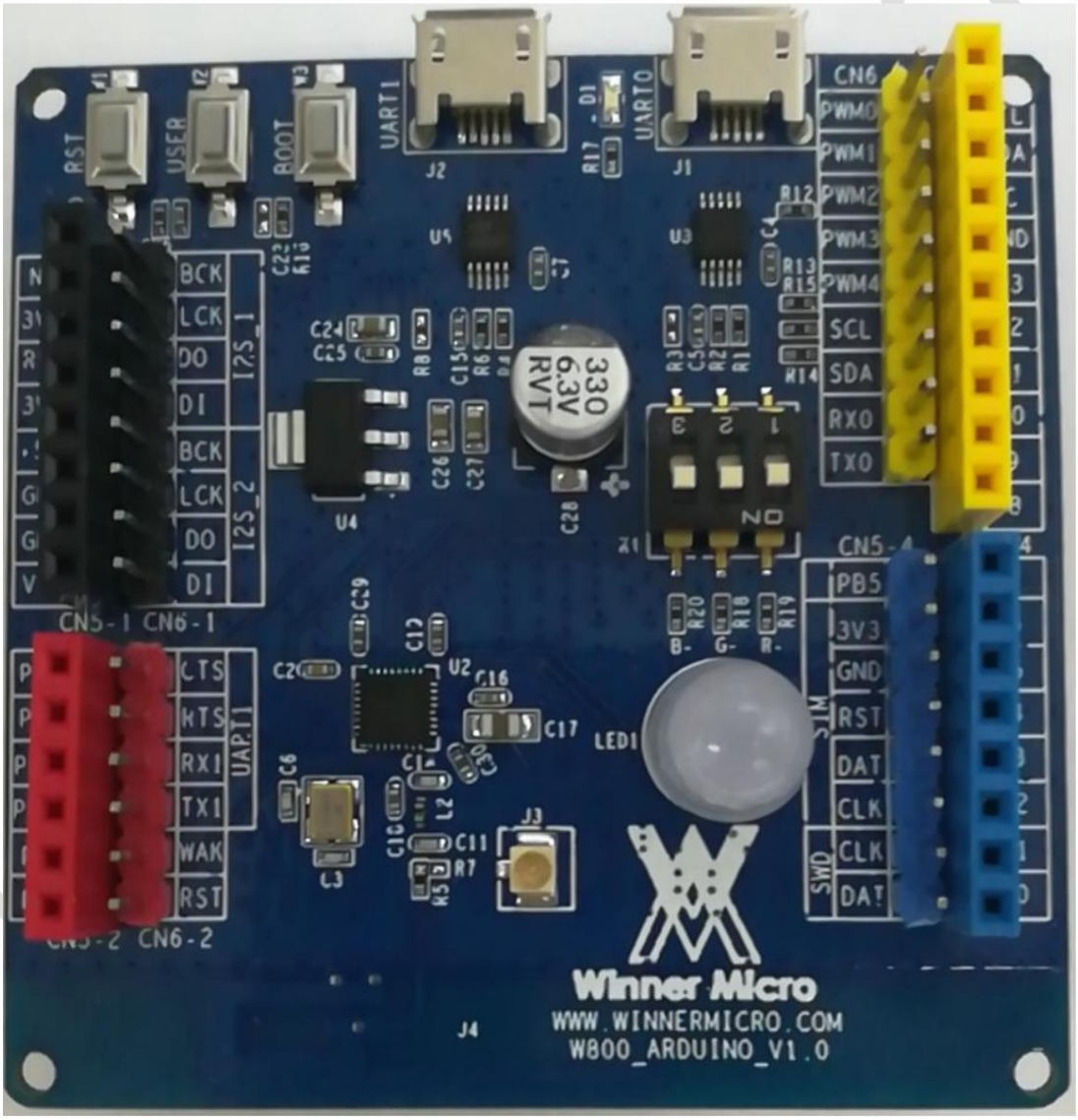
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ÿ w800 sdk

ÿ Serial tool (support xmodem protocol)

ÿ Code editor

3 **Introduction to w800 Development Board**



W800 Arduino development board provides the following interfaces:

ÿ I2C&I2S interface

ÿ Uart0&SWD debugging interface ÿ

SPI&Uart1 communication interface

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ÿ PWM interface

ÿ SIM interface

ÿ GPIO

ÿ Micro-USB interface

The user connects to the host computer through the Micro USB port, and burns the firmware through the UART0 port.

4 **w800 build environment**

4.1 w800 toolchain

linux platform: (get latest toolchain)

csky-elfabiv2-tools-x86_64-*.tar.gz

csky-elphabiv2-tools-i386-*.tar.gz

windows platform:

csky-elfabiv2-tools-mingw-*.tar.gz

Get path:

https://occ.t-head.cn/community/download?id=616214177698021376

4.2 Development environment installation

The w800 is developed based on the gcc compilation environment. Before using the project formally, it is necessary to complete the installation of the compilation tool. The specific steps

The steps are as follows:

4.2.1 Windows

4.2.1.1 Compiling environment based on linux virtual machine

Get path:

Link: https://pan.baidu.com/s/1GFgly3mIyX_jb70ULWLbDw

Extraction code: n1ca

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Using the VirtualBox environment, install VirtualBox-5.2.38-136252-Win.exe

The Ubuntu virtual machine is: WinnerMicro_Ubuntu.7z

Precautions:

1) Try to close the anti-virus software

2) It is recommended to use the official virtual machine environment

4.2.1.2 Cygwin-based compilation environment

Get path:

Link: https://pan.baidu.com/s/1sBW5Fnhh6OgqRxl3hmNdoQ

Extraction code: q6zb

The link above is the extraction path of the w800 product package, and the path for the user to obtain the tool is: W800_ProductPackage->

Development Kit -> Compilation Tools

After the tool is installed, it will be added to the right-click menu. Users only need to right-click the root directory of the SDK to open the command-line tool, and follow the

All you need to do is make related operations.

File name: cygwin4wm_setup_vx.xxexe

See the document: "WM_W800_SDK Command Line Compilation Guide"

4.2.1.3 CDK-based compilation environment

Get path:

Link: https://occ.t-head.cn/community/download?id=575997419775328256

The above is the location of Pingtouge's CDK download link. Users can download and install it according to their needs. This is a visual

Development and compilation environment.

Notice:

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1) The depth of the CDK compilation environment path should not exceed 80 characters, otherwise an error will be reported when compiling

2) It is recommended to decompress the SDK to the root directory of the disk, and then open the CDK project to compile.

3) The CDK project is only available in V1.00.00 and later versions

4.2.2 Linux

From the official website https://occ.t-head.cn **Pingtouge Chip Open Community->Technical Tribe->Resource Download->Tools, Root**

Choose to download the applicable "800 **Series Toolchain" according to your local system environment.**

toolchain name	**Applicable system**
-i386-minilibc-.tar	32-bit linux system
-x86_64-minilibc-.tar	64 bit linux system
-mingw-minilibc-.tar	windows system

After downloading, extract the compilation toolchain to a certain path (such as the opt directory), and set the compilation toolchain path to the environment

Variables, for example:

```
export PATH=$PATH:/opt/ csky-elfabiv2-tools

/bin
```

After the above settings are completed, the compilation toolchain is available, and the next compilation work can be performed.

Users can also write the path configuration of the tool chain to configuration files such as .profile to achieve the purpose of automatic configuration

Users can also directly specify the toolchain path in the sdk.

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4.2.3 MacOS

Install the virtual machine environment and obtain the path:

Link: https://pan.baidu.com/s/1GFgly3mIyX_jb70ULWLbDw

Extraction code: n1ca

Using the VirtualBox environment, install VirtualBox-5.2.38-136252-OSX.dmg

The Ubuntu virtual machine is: WinnerMicro_Ubuntu.7z

5 **SDK project acquisition**

How to obtain w800 sdk : Winner Micro official website (www.winnermicro.com), detailed location:

http://www.winnermicro.com/html/1/156/158/558.html, software information

If you have obtained the w800 sdk, just decompress it directly to a non-Chinese path.

6 **SDK project compilation**

If you have completed the installation of the compilation environment according to chapter 4, and obtained the w800 sdk through the guidance of chapter 5 package, then the next step is to compile and generate firmware.

6.1 **Windows**

6.1.1 **Ubuntu virtual machine**

Copy or download the sdk from the website to the virtual machine environment, open the device terminal (Terminal), decompress the sdk tool program, modify the sdk project permissions (shell command: chmod), enter the root directory of the project, execute make on the terminal to start start compiling.

The w800 firmware will be generated. The firmware is located in the bin\w800 directory of the w800 sdk project. The generated files include:

w800.fls: serial programming

w800_ota.img: OTA Masuku

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w800.map: map file

6.1.2 **CDK project**

Copy the sdk or download it from the website, after decompressing the sdk project, from the decompressed SDK directory

Open CDK_WS.cdkws in the tools\w800\projects\sdk_project directory.

6.2 Linux

Copy or download the sdk from the website to the virtual machine environment, open the device terminal (Terminal), decompress the sdk tool program, modify the sdk project permissions (shell command: chmod), enter the root directory of the project, execute make on the terminal to start start compiling.

6.3 mac os

7Firmware **burning**

After completing the previous step 6, the burnable w800 firmware has been generated.

Next, we will introduce how to burn the firmware to the w800 development board, taking the burning of the Windows environment as an example, other environments (linux or mac os) the serial port display is different, but the operation steps are basically the same.

7.1 Operation steps under Window

1. Connect the PC and the w800 development board through the USB cable (the default connection is w800 **UART0, the baud rate is 115200bps, 8 data bits, no parity bit, 1 stop bit)**

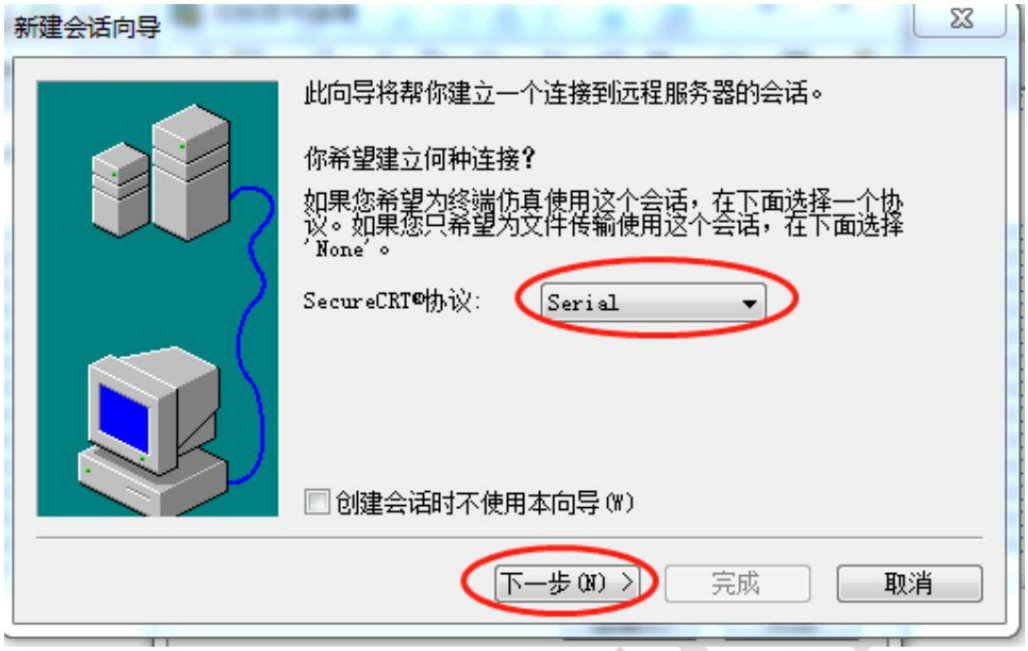
2. Confirm the COM port used to connect to the w800 in the device manager of the PC (Windows environment)

3. Open the serial port tool (take SecureCRT as an example), select the COM **port (baud rate 115200bps, 8 data bits, no parity bit, 1 stop bit)**

1) Under SecureCRT, select a new session (as shown in the figure below), and select Serial as the protocol (you can select it in the drop-down menu) select)

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2) Click Next to enter the serial port selection configuration page (note: do not check RTS/CTS), click Next

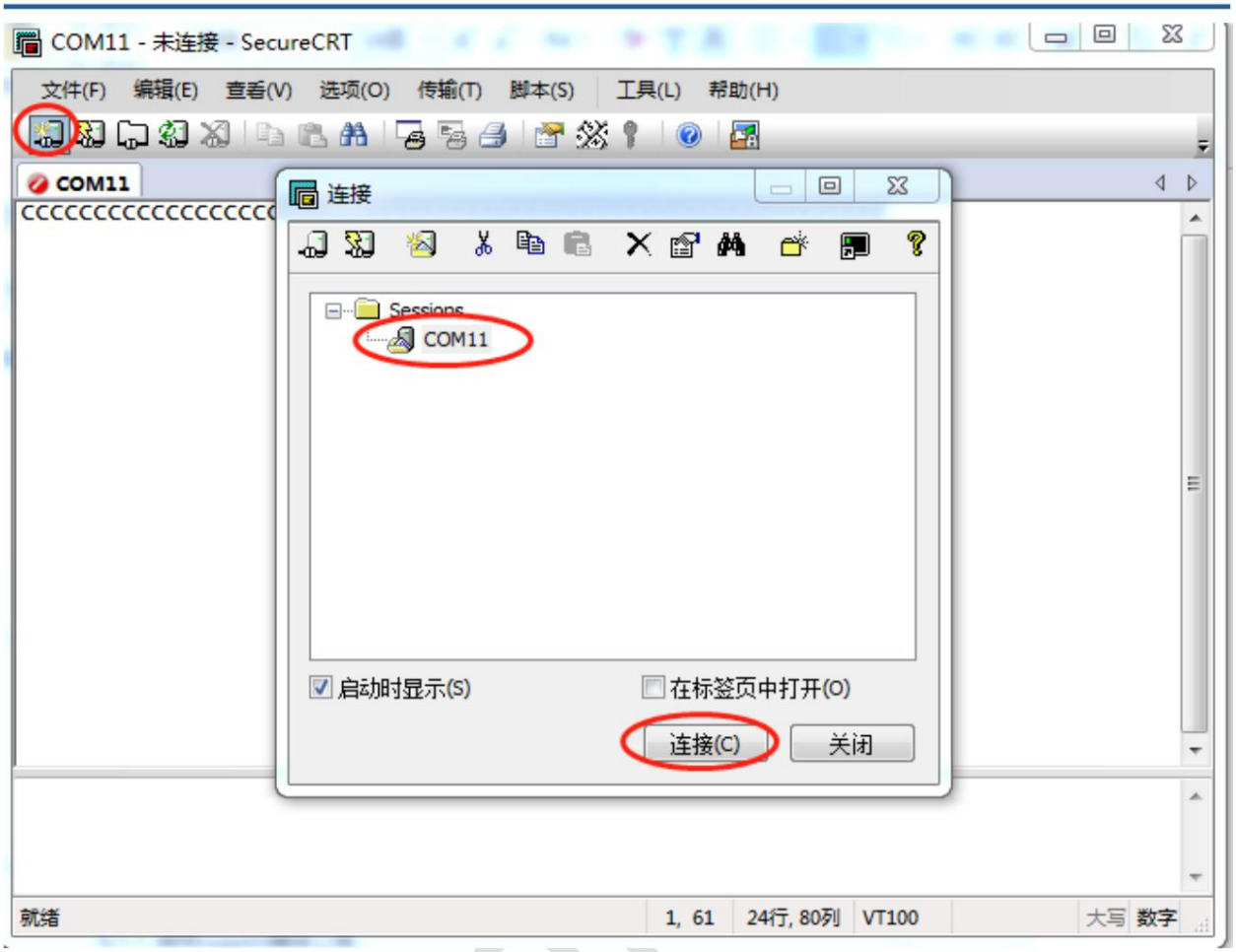
Set the session name (it can also be the default, as long as it is not repeated), click Finish



3) As shown in the figure below, click Connect to pop up the connection option, select the specified COM, and then click Finish, the serial port is connected

to make.

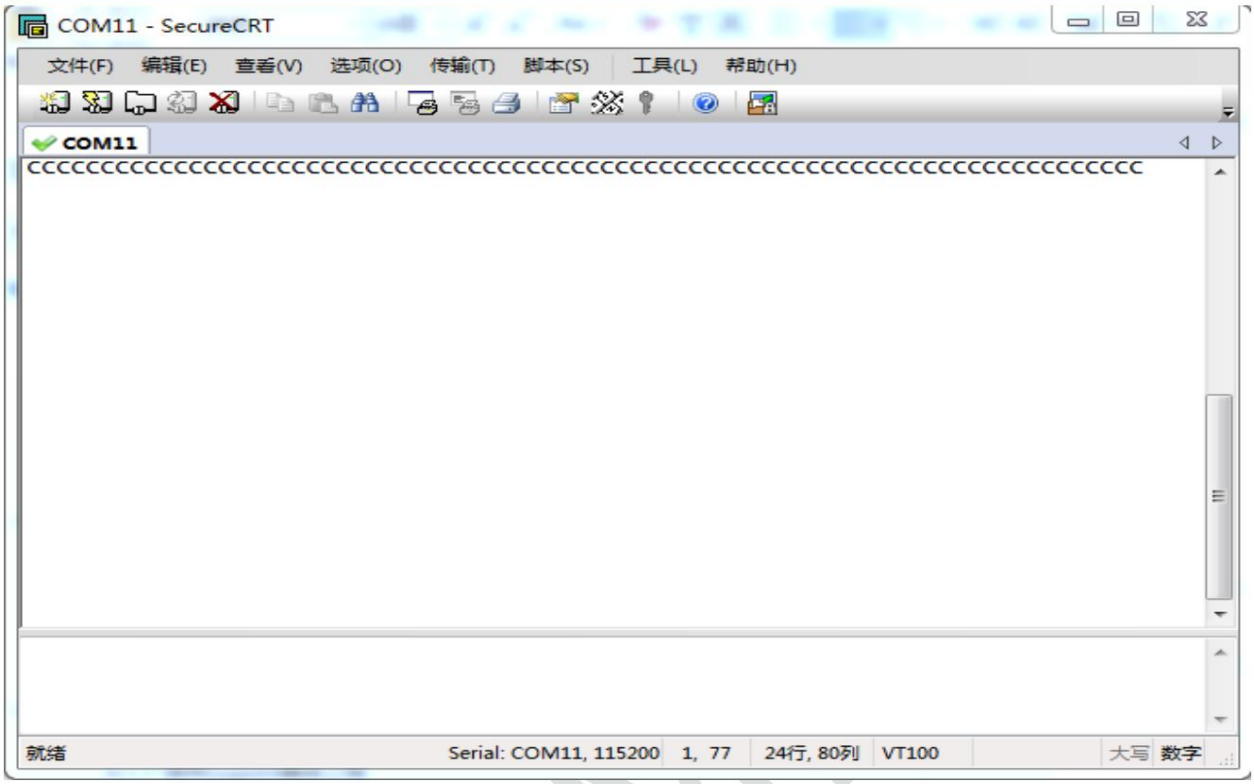
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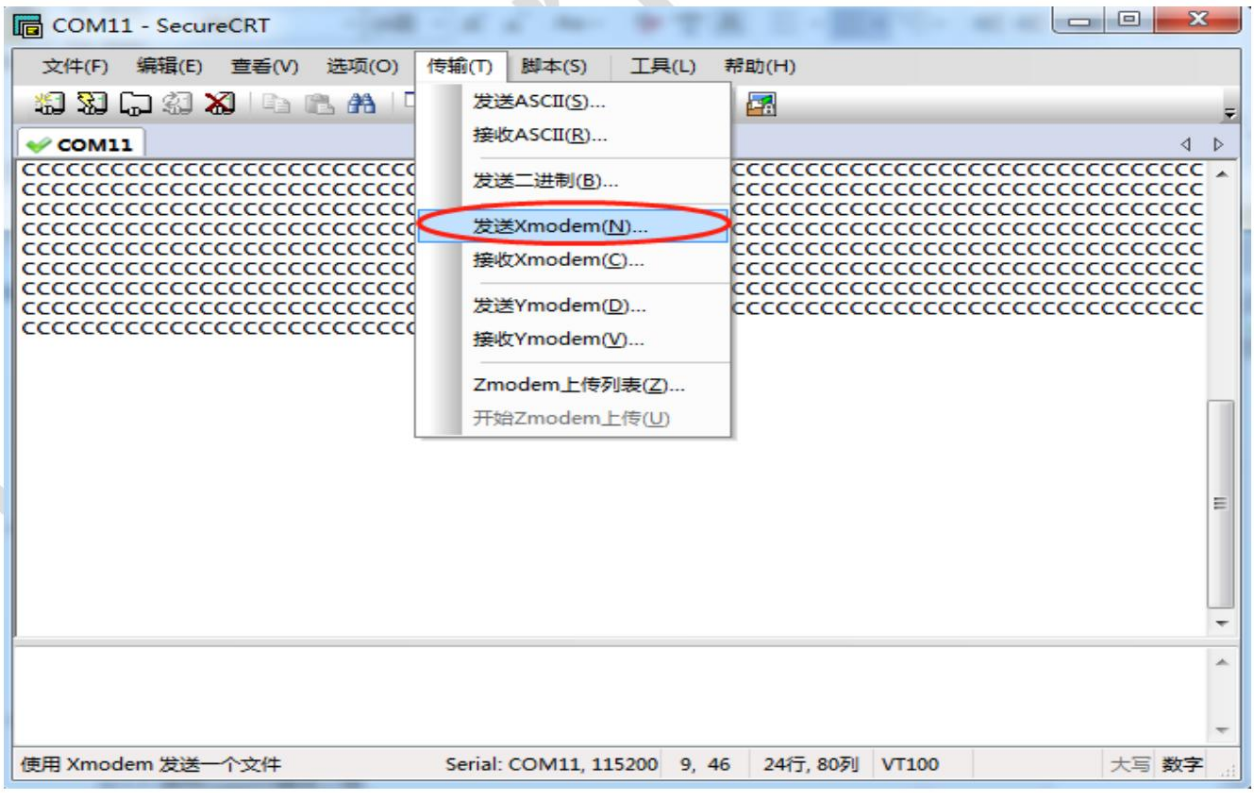
4. Press the bootmode pin of the development board. After reset and start, the module will enter the upgrade mode after startup, and the serial port will continuously print

The character 'C' (as shown in the figure below), at this time, release the **bootmode** foot.

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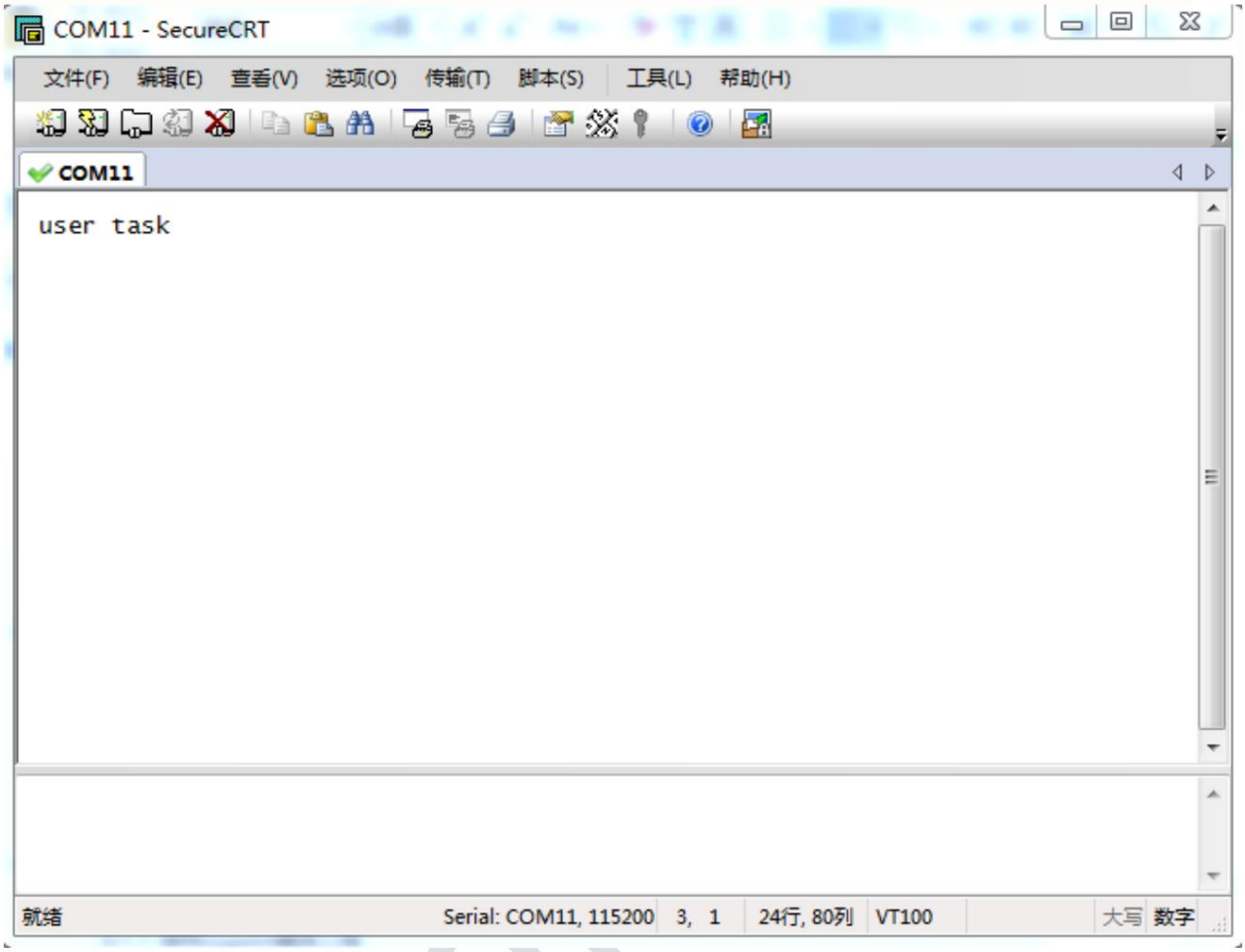
5. Under the serial port tool, select the menu transmission, drop down and select Send Xmodem, and after the dialog box pops up, select the firmware w800.fls



6. Click Open to start the upgrade. After the upgrade is complete, the serial port will continue to print CCC

7. Reset the module, the serial port prints user task, which means that the w800 development board has started normally

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7.2 Upgrade steps under Linux

7.3 Upgrade steps under Mac os

8 **serial debugging**

After completing step 7, if you use the w800 sdk to download the firmware in the bin directory after decompression, then the w800 development board

The firmware that supports the at command is running on it. Users can refer to the w800 at command manual for related operations.

9 **w800 sdk how to start writing user programs**

9.1 User Entry

The entry function UserMain of the sdk of w800 is located in the sdkdir\app\main.c file (the following example code

code).

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```
void UserMain(void)
{
    printf("\n user task \n");-------w800 startup complete printing

    #if DEMO_CONSOLE ------w800 reference sample code (combined with wm_demo.h macro switch)
        CreateDemoTask();
    #endif
    //user task------------------User task creation starts from here
}
```

9.2 How to use the demo

The reference sample code of w800 is located in the sdkdir\demo directory, which needs to be opened in combination with the relevant macros in wm_demo.h off to use.

For detailed demo instructions, please refer to the document: WM_W800_SDK_DEMO instructions

9.3 How to use the at command

The code related to the at command of w800 is located in the sdkdir\src\app\wm_atcmd directory, which needs to be combined with The macro switches in wm_config.h (below) are used.

```
/**Host Interface&Command**/
#define TLS_CONFIG_HOSTIF                CFG_ON
#define TLS_CONFIG_AT_CMD                (CFG_ON && TLS_CONFIG_HOSTIF)
#define TLS_CONFIG_RI_CMD                (CFG_ON && TLS_CONFIG_HOSTIF)
```

For detailed instructions on using the at command, please refer to the document: WM_W800_SDK_AT command user manual

Note: because the at command and the demo example both use serial port 0, they cannot be used at the same time.

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